CEREAL RUST BULLETIN

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Issued by:

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Reports from this list as well as all Cereal Rust Bulletins are maintained on the CDL website (*http://www.ars.usda.gov/mwa/cdl*)

- Numerous wheat stem rust foci were found in a nursery in North Carolina.
- Wheat leaf rust was observed at low levels in fields in western Kentucky and at very low levels in south central Nebraska.
- Wheat stripe rust was observed in fields in Idaho and Montana.
- A large wheat stripe rust foci was found in a nursery in northeastern Kansas.

For original, detailed reports from our cooperators and CDL staff, please visit the Cereal Rust Situation (CRS) reports page on the CDL website or click the CRS links found throughout the bulletin. The cereal rust observation maps (Maps) can also be found on the CDL website.

Ongoing drought conditions continue to be an issue in Kansas and Nebraska (see Drought Monitor). Above average precipitation fell in parts of Texas, the Southeast and upper Midwest last week.

The winter wheat crop was 79% headed by May 31, just slightly ahead the 5-year average. Winter wheat harvest was underway in much of Texas and Georgia and had begun in Oklahoma, Mississippi and Arkansas by June1. Recent rains in Oklahoma came too late to help this year's crop. Eighty eight percent of the spring wheat crop was planted, on par with the 5-year average, by June 1.

Ninety five percent of the spring oat crop was sown, 2 points behind the 5-year average, by June 1. Thirty two percent of the national oat crop was at or beyond heading on June 1, two points behind the 5-year average. The spring barley crop was 93% planted, four points ahead of the 5-year average.

Wheat stem rust.

Numerous wheat stem rust foci were found in a misted scab nursery at Raleigh in central North Carolina in mid-May. Most of the infections were found on the line SS520 with lesser amounts on USG3592. Wheat stem rust is uncommon in North Carolina, but can appear in mid- to late May just prior to senescence.

Previously, wheat stem rust was reported in plots at Weslaco and Castroville, in the Rio Grande Valley, Texas and South Texas, respectively. Race QFCSC, the most commonly identified wheat stem rust race in recent years, was identified from collections made at Weslaco.

Wheat leaf rust.

Leaf rust is at extremely low levels and not widespread in Oklahoma and Kansas while very low levels were found in a few locations in south central Nebraska. Drought conditions in Oklahoma, Kansas and Nebraska greatly limited rust development. In the Southeast and mid-Atlantic areas wheat leaf rust is more widespread, but generally at low levels with the exception of higher severities noted on the cultivar Shirley at some locations.

Oklahoma – Other than the low levels of leaf rust found in one irrigated wheat field in central Oklahoma in early May, rust has not been reported in the state. Drought conditions in the state coupled with high temperatures and wind have not been conducive for wheat or rust development. Seventy eight percent of the winter wheat crop is rated poor to very poor. Many fields will not be harvested, however irrigated fields in the panhandle had better yield potential and a very few dryland fields appeared to have some yield potential. Wheat in the state is at or approaching maturity with 6% of the crop harvested by June 1.

Kansas – Low levels of wheat leaf rust were observed in plots (at milk stage) near Manhattan in northeastern Kansas on May 28. This was the first report of wheat leaf rust in the state this season. Persistent drought and high temperatures have not been conducive for wheat or rust development.

Nebraska – Only two pustules of leaf rust were found in a survey of fields in south central and southeastern areas of the state on June 4. The fields surveyed were virtually disease free. A majority of the fields in the south central area were severely drought stressed. The wheat was at soft to hard dough stage.

In late May, A few pustules of wheat leaf rust were observed in Nuckolls County in south central Nebraska. Additionally, wheat leaf rust was confirmed in collections made in Clay County also in south central Nebraska. The wheat in the area was at flowering stage. These were the first confirmed reports of wheat leaf rust in the state in 2014. There is very little inoculum to the south in Kansas and Oklahoma.

Kentucky – Wheat leaf rust was widespread, but generally at low severity levels, in western Kentucky by late May. Most infections were found on the F-1 and F-2 leaves and occasionally on flag leaves. Wheat was at grain filling stages. Recent rains and warm temperatures are conducive for further development.

Louisiana – Due to the cool winter and spring wheat leaf rust occurred late in the season and at lower levels than average in Louisiana. Leaf rust in plots developed in grain filling stages and did reach higher levels in late April and early May as the plants approached physiological maturity, but yield impact was likely minor.

Arkansas – Wheat in the state is rapidly nearing physiological maturity. Very little wheat leaf rust was reported in the state this season. Low levels of leaf rust were observed in plots at Marianna and Newport in eastern Arkansas.

Mississippi – There have been no new reports from the state. Previously, trace levels of wheat leaf rust were reported in Greenwood in the eastern Delta region in late April. Three percent of the winter wheat crop was harvested by June 1.

Georgia – Wheat leaf rust had developed to severe levels on many lines in plots at Plains in southwestern Georgia by the third week in May. Plots of Shirley (postulated to have *Lr26* and *Lr18*) had higher levels of leaf rust than seen in previous years. Twenty four percent of the winter wheat in the state was harvested by June 1.

North Carolina – In eastern North Carolina, leaf rust continued to increase in plots at Kinston while at Ayden leaf rust was just beginning to appear the third week of May. Recent conditions were conducive for leaf rust development. Plots of DG Shirley in North Carolina also had higher levels of leaf rust severity than in past years.

In tests at the USDA- ARS Cereal Disease Laboratory, DG Shirley had high infection type to leaf rust race TCRKG that is virulent to *Lr18* and *Lr26*. Marker data indicated the presence of the 1B/1R translocation in DG Shirley, indicating the presence of *Lr26*. DG Shirley has been postulated to also have *Lr18* based on the seedling leaf rust tests.

In 2013, virulence to *Lr26* was at 44% and virulence to *Lr18* was at 33% of the southeastern population. Races with virulence to both genes may be further increasing in frequency or a new race(s) with particular virulence to DG Shirley may be present.

Virginia – Wheat leaf rust, at low incidence and severity, was found in a nursery headrow at Warsaw in eastern Virginia in the third week of May.

Wheat leaf rust map. *Please visit:* http://www.ars.usda.gov/Main/docs.htm?docid=9757.

Wheat cultivar *Lr* gene postulation database. *Please visit*: Leaf rust resistance gene postulation in current U.S. wheat cultivars.

Wheat stripe rust.

Kansas – A large stripe rust foci was found in plots of 2137 near Manhattan in northeastern Kansas in late May. The spread from the foci center suggested the stripe rust infection developed 3-6 weeks prior. Most wheat at the location was at milk stage. The risk of severe development of stripe rust is low due to the warmer temperatures and warm night time temperatures.

Virginia – One small wheat stripe rust foci was found in nursery headrows at Warsaw in eastern Virginia on June 3. Stripe rust has not been reported elsewhere in the state.

Oregon – Low levels of stripe rust were observed in three commercial winter wheat fields in Umatilla County in northeastern Oregon on May 22. A few leaves with stripe rust were found in plots at the Pendelton Experiment Station and low levels of stripe rust were found on several lines at the Hermiston Station both in Umatilla County. Stripe rust disease pressure was low in the western part of the state the third week of May.

Washington – Very low levels of stripe rust were found in three commercial fields north of Walla Walla in southeastern Washington on May 22. In one of the fields stripe was easy to find, but incidence was below 1%. No stripe rust was found in fields visited south of Walla Walla. Two stripe rust lesions were found in a commercial wheat field in Columbia County in southeastern Washington. No rust was found in commercial fields visited in Whitman, Benton and Franklin Counties in southeastern Washington. Winter wheat ranged from Feekes 7 to 10.5, while spring wheat ranged from Feekes 2-6. Generally, stripe rust disease pressure was low in eastern Washington in late May.

Stripe rust, first noted in April, in nurseries outside of Walla Walla was now easy to find on May 22, but at very low levels. Stripe rust had reached 80% severity on susceptible winter wheat checks in plots at Mount Vernon in northwestern Washington by late April.

Idaho – Stripe rust was found in a field of the cultivar Brundage in the Hazleton area of south central Idaho in late May. The stripe rust was mostly confined to flag leaves and the wheat was just beginning to head. Stripe rust was readily found on Brundage in 2013, but growers like the high yield potential of the cultivar. One pustule of stripe rust was found in a nursery near Moscow in northwestern Idaho on May 21.

Montana – Wheat stripe rust was found on the cultivar Yellowstone in the Hardin area south central Montana in late May. It was presumed that Yellowstone was resistant to the predominant stripe rust races east of the Rockies, samples were sent to Xianming Chen for race typing.

Please send wheat and barley stripe rust collections as soon as possible after collection to:

Dr. Xianming Chen
USDA-ARS
361 Johnson Hall
P.O. Box 646430
Washington State University
Pullman, WA 99164-6430
email: xianming@wsu.edu

***Note**:* Stripe rust collections are vulnerable to heat and do not survive long at warm temperatures; therefore, if shipment of collections for race identification is delayed their viability will be greatly reduced. An overnight courier service is preferred for sending stripe rust collections.

Wheat stripe rust map. *Please visit:* http://www.ars.usda.gov/Main/docs.htm?docid=9757.

Oat stem rust. There have been no new reports of oat stem rust since the last bulletin. Oat stem rust has been reported in Louisiana and central and southeastern Texas.

Oat crown rust map. *Please visit:* http://www.ars.usda.gov/Main/docs.htm?docid=9757.

Barley stem rust. Not yet reported in the U.S. this year.

Barley leaf rust. There have been no new reports of barley leaf rust since the last bulletin. Barley leaf rust, at moderate prevalence and severity, was observed in nurseries at Warsaw and Painter in eastern Virginia and at high prevalence and severity in western Virginia in mid-late May. Barley was at soft dough stage. Barley leaf rust was also found in plots in northwestern Washington in late March (see CRS).

Barley leaf rust map. *Please visit:* http://www.ars.usda.gov/Main/docs.htm?docid=9757.

Rust on barberry. Moderate amounts of early aecial infection were found on common barberry (*Berberis vulgaris*) in Dane County in south central Wisconsin in early June. Previously, light amounts of early aecial infection were observed on common barberry in southeastern Minnesota on May 21.

Rust on buckthorn. Crown rust aecia were first observed on buckthorn in Ithaca, New York on May 16 and were prevalent on buckthorn in central New York the fourth week of May. Common buckthorn **(***Rhamnus cathartica*) is the alternate host for oat crown rust.